

## DHS Science and Technology Directorate

# Network Extension: WideBridge™ – Bridging the gap to First Responder mission critical broadband services

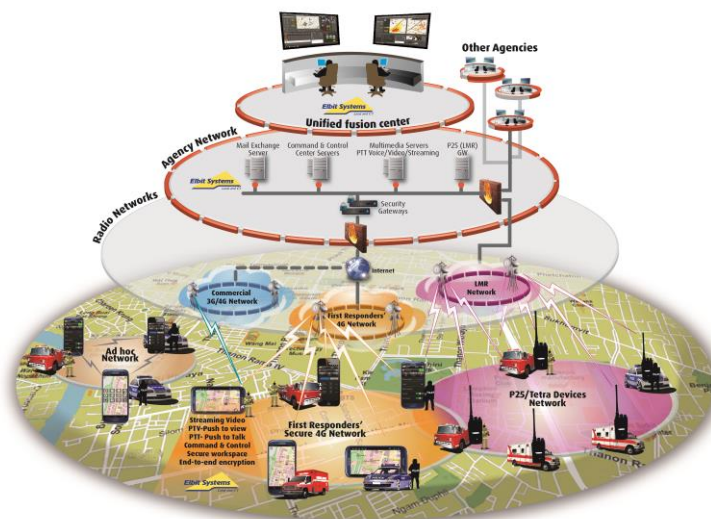
### Leveraging Land Mobile Radio (LMR) and commercial broadband networks

The use of smartphones and broadband services is not just pervasive with the public, but is permeating the first responder community as well—whether agency issued or personal. Currently, the majority of this communication occurs across commercial networks; however, with the creation of the nationwide public safety broadband network, first responders will have access to increased capacity and coverage on a dedicated network. Broadband provides first responders with enhanced capabilities and serves as a medium to access large amounts of data. Nevertheless, it cannot yet provide first responders with mission critical voice capabilities (i.e., radio-to-radio or one-to-many communications) that are available on LMR networks. Therefore, the reality is that LMR and broadband networks will likely coexist for years to come.

The Department of Homeland Security Science and Technology Directorate and Customs and Border Protection have partnered to conduct research addressing first responder needs for mission critical voice over broadband, remote management (e.g., over the air programming), video and data transfer to tactical users, and network integration (i.e., ability to roam across LMR and Broadband networks). Addressing these needs, in part, was the impetus for the network extension project. In 2014, the WideBridge solution will undergo initial laboratory testing at the Department of Commerce's Public Safety Communications Research Boulder labs. This solution will undergo field tests across the country and is expected to be publicly available in 2015.

### Flexible System Architecture

The WideBridge architecture provides a network and user device solution for secure Internet Protocol services regardless of manufacturer. Based on a scalable open-architecture, it enables cost-effective launch of new services. A set of software systems and servers installed at the agency network or on the cloud enables interoperability with disparate networks (e.g., LMR and broadband networks) using Project 25 (P25) gateways, multimedia servers, digital mapping and command & control servers, creating a common operational picture between all broadband users. P25 standards allow radios and other components to interoperate regardless of manufacturer.



### Innovative Device Capabilities

To mirror current LMR functionality, WideBridge enables the field user to access device-to-device broadband off-network connectivity. Within this ad-hoc mesh, each device acts as a repeater, enabling self-forming network connectivity. In addition, these broadband devices can be remotely configured and controlled by a centralized mobile device management server. A unique feature of WideBridge is Push to View, which allows video transfer from user-to-user and video-streaming from any connected video sensor. All services are end-to-end secured and AES-256 encrypted. WideBridge devices also use Long-Term Evolution broadband networks to enhance first responder effectiveness and test new concepts of operation resulting from immediate access to a vast array of operational data sources (e.g., text, images and video).

### Benefits of Network Extension: WideBridge™

- P25 networks interoperability, talking groups sharing
- Push-To-Talk, Voice over Internet protocol conference call
- Push to View, or see What I see, video streaming & conferencing
- Direct mode for voice, video & data services
- Centralized remote user-device management
- Security Features: AES-256 end-to-end encryption, FIPS 140-2 certified, user authentication
- Blue force tracking and situational awareness map activated multimedia services



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To learn more about the Network Extension: WideBridge™, contact [SandTFRG@dhs.gov](mailto:SandTFRG@dhs.gov).

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